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ABSTRACT

This paper identifies an emerging capability in technology and considers relevant applications through school-site administration that could release teachers' creative human potential in ways beneficial to students. The paper examines the use of multimedia authoring tools in relation to curriculum development and enhancement, instructional delivery, and accurate measurement of instructional effectiveness. It focuses on how the technological integration of voice, image, sound, and motion in the educational process could facilitate teachers' creative potentials. School-site leadership is perceived as facilitating optimal development of the creative human potential residing in each faculty member. It is concluded that: (1) technology could be used as a vehicle to free faculty members from necessary but time-consuming routine tasks; (2) the creative use of technology could open up new perspectives of the possible for the school; and (3) proper use of technology could diminish the deadening effect of bureaucracy on educational reform at the school site level. (Author/LMI)

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EMERGING TECHNOLOGY IN SCHOOL SITE ADMINISTRATION: IMPLICATIONS FOR INCREASING HUMAN POTENTIAL

A paper

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EMERGING TECHNOLOGY IN SCHOOL SITE ADMINISTRATION: IMPLICATIONS FOR INCREASING HUMAN POTENTIAL

ABSTRACT

The purpose of this paper was to identify an emerging capability in technology and consider relevent applications through school site administration which might help release teachers' creative human potential in ways beneficial to students. Although substantial literature existed on technology and educational management, relatively little addressed how use of technology in school site leadership might help increase such human potential.

The use of multimedia authoring tools was examined in relation to: (1) curriculum development and enhancement; (2) instructional delivery; and (3) accurate measurement of instructional effectiveness. Emphasis was placed upon how the technological integration of voice, image, sound and motion in the educational process could help facilitate the creative professional potential of the teacher.

School site leadership was perceived as facilitating optimal development of the creative human potential residing in each faculty member. It was concluded that: (1) technology could be used as a vehicle to free faculty members from necessary but time consuming routine tasks; (2) creative use of technology could help open up new perspectives of the possible for the school; and (3) proper use of technology could help diminish the deadening effect of bureaucracy on educational reform at the school site level.

EMERGING TECHNOLOGY IN SCHOOL SITE ADMINISTRATION: IMPLICATIONS FOR INCREASING HUMAN POTENTIAL

The impact of technology on school site administration in recent years has been extensive. However, most of the literature on technology and educational management fails to address how advances in technological capability might be used by school site leadership to help release the creative human potential of teachers.

This paper identifies an emerging technological capability -- multimedia authoring tools -- and considers relevant applications through school site administration which might help release teachers' creative potential in ways beneficial to student learning. Specifically, use of multimedia authoring tools is examined in relation to:

-- curriculum development and enhancement.

-- instructional delivery.

-- accurate measurement of instructional effectiveness.

Emphasis is placed upon how the technological integration of voice, image, sound and motion in the educational process might help facilitate development of the creative human potential of the teacher. The role of the principal in fostering such professional development is seen as vital.

School site leadership has been perceived as facilitating student learning by nurturing optimal development of the creative human potential residing in the teacher (Lovell and Wiles, 1983; Pankake and Burnett, 1990). The concept that each person has potential waiting to be self-actualized was advanced by Maslow (1943, 1954) and applied to the field of management by McGregor (1960). Burnett (1994) recently postulated a moral imperative incumbent upon school

site administrators to facilitate incorporation of such potential into the organizational development of the school.

An Overview of Multimedia Authoring Tools

Multimedia authoring tools are computer-based software programs that facilitate the integration of voice, sound, image and motion into application programs which can be used for instructional purposes. The technology of multimedia enables presentations to take on more realistic appearances than past application programs which only provided still images without voice, sound or motion. Entire courses are being developed using multimedia applications.

As an instructional aid, multimedia authoring software enables teachers to take an abstract concept and present it concretely and realistically to students. For example, a simple mathematical concept like subtraction or division can be much more meaningful in early childhood education when the instructor can graphically show the process using moving objects to illustrate the concepts rather than relying on traditional classroom methods. It has often been said that a picture is usually more informative than words. A moving picture accompanied by voice narration and realistic sound effects can be even more informative and can enhance learning. From an instructional standpoint, multimedia authoring tools enable the instructor to become more creative in his or her approach to teaching methods and strategies.

A number of the personal computer-based multimedia authoring tools available on today's market require some technical knowledge of computer programming languages. However, the trend is toward making these tools more intuitive and less dependent on technical knowledge to be put to productive use by novice computer users who are also excellent teachers.

Site administrators who are aware of the capabilities of multimedia authoring tools and

who have acquired a basic understanding of their use can be instrumental in making instructors aware of the potential of these tools to increase the human creativity of the faculty. When faculty members are competent in the content areas in which they teach, multimedia authoring software can provide them with the tools necessary to "bring an abstract idea to life." A visual representation accompanied by voice, sound and motion can serve to stimulate learning in students. For example, a reenactment of the Wright brothers' first flight displayed during a history lesson focusing on that historic event could easily become an exciting stimulus for learning and retaining important information describing the event. In this sense, the use of multimedia authoring software leads to increased knowledge retention as a result of humanizing the instruction by taking it out of a typical textbook description to a description that seemingly "takes you there."

Site administrators should be the instructional leaders within their respective schools. While administrative responsibilities are a natural part of the job, instructional leadership is very important to achieving the educational objectives of the school. Planning for computing is a very important function that should be an integral part of the overall planning process for a site administrator (Felder and Britton, 1988). Many instructional objectives can be achieved through the use of multimedia authoring tools at a more rapid pace than with traditional teaching methods. Courses which use multimedia as part of the instructional strategy are more likely to achieve educational objectives faster because of their ability to assist students to learn at a more rapid pace than courses structured around the traditional lecture only model.

There are a number of multimedia authoring tools available for purchase. Five frequently used multimedia authoring tools were reviewed by PC Magazine in its April 22, 1994 issue. In

that issue the reviewers used a structured methodology to rate the overall value of each of the tools for use in developing courses. The five products are: (1) IconAuthor for Windows, Version 5.0; (2) Aysymetrix Corporation's Multimedia ToolBook authoring package; (3) Global Information Systems Technology Inc's TIE Authoring System for Windows; (4) American Training International's TourGuide for Windows; and (5) the Microsoft Multimedia Viewer Publishing Toolkit. A comprehensive analysis and evaluation of these products will not be attempted here. However, key results of the PC Magazine evaluation follows.

The five products are all very good multimedia authoring tools for nonprogrammers. Each product required little technical background to be useful in developing computer-based training or courses for educational purposes. IconAuthor emerged as the most solid all-around value for creating multimedia applications. It is considered a high-end multimedia authoring product that provides professional-level capabilities and is accessible to nonprogrammers. It uses a graphical interface with pop-up dialog boxes and supplementary editing modules that make it easy to master programming functions (PC Magazine, 1994).

On the other hand, Aysymetrix Corporation's Multimedia ToolBook authoring package is flexible, extensible and inexpensive, but, requires a considerable amount of hand-coding, making it unsuitable for nonprogrammers. It employs a 'book' metaphor similar to the Macintosh Hypercard stack concept and is highly event-driven and interactive. Multimedia ToolBook lacks professional drawing tools, although it has import filters for vector-based graphics files. Animation support is sophisticated, and creating hypertext applications is easy. Multimedia ToolBook is a good value for professional programmers (PC Magazine, 1994).

Global Information Systems Technology Incorporation's TIE Authoring System for

Windows appears basic at first but includes a powerful programming language that is fairly easy for beginners to use. Users can quickly generate code in the package's proprietary Tutor language. TIE's basic building block, the Unit, may be an opening screen, a list of initial choices or a test screen and is made up of a series of icons representing multimedia elements. There is no flowchart for an overall view of the icons. Assembling a finished project is fairly easy once users master the logic of the program and the Unit scheme. Many graphical and multimedia effects are available. TIE's greatest strength is its ability to build sophisticated testing scripts. A Test Question icon acts as a template for a variety of question formats to which the developer adds correct answers and feedback statements. Output Presentation icons allow the addition of sophisticated multimedia elements. TIE is available on multiple platforms with runtime versions for UNIX as well as Microsoft Windows (PC Magazine, 1994).

American Training International's TourGuide for Windows is excellent for creating computer-based training (CBT) applications and uses a 'road-trip' metaphor. It is aimed at experienced developers familiar with MCI command strings and exotic scripting languages. It is very flexible and powerful, but difficult to learn (PC Magazine, 1994).

Finally, Microsoft Multimedia Viewer Publishing Toolkit 2.0 is not a full-fledged authoring product but a tool for creating 'content' titles as reference works. It is not suitable for computer-based training or kiosk applications, but users can create multimedia presentations with it. Viewer offers more extensive search capabilities than traditional multimedia authoring systems and is easy for nonprogrammers to use. Its authoring metaphor is based on the Rich Text Format (RFT) files generated by Microsoft Word. Programmers can add interactive functionality via Dynamic Link Library (DLL) extensions and C programming language routines. The runtime

program is royalty-free but requires a multimedia microcomputer with a CD-ROM players. Viewer has an interface similar to that of the Windows Help system and is very easy to work with. It has a standard search interface which developers can customize (PC Magazine, 1994).

Relationship of Multimedia Authoring Tools to Curriculum Development and Enhancement

The teacher's use of multimedia authoring tools as discussed above necessarily facilitates development of whatever curriculum is being taught. Lovell and Wiles (1983) defined curriculum as "the planned objective conditions of the interactions that it is anticipated will occur between the student and the school-selected and school-directed environment" (p. 144).

It is precisely in planning the objective conditions of those anticipated interactions that the use of multimedia authoring tools might help release the teacher's latent creative potential. Far from reducing the instructor to a mere cog in the instructional machine, use of multimedia authoring gives the teacher much greater control in selecting and designing the planned objective conditions of those interactions. Through the use of multimedia authoring tools the teacher becomes the master planner of interactions which involve the students in the affective domain of learning as well as the cognitive (Bloom, ed., 1956, 1976). The curriculum becomes a living condition of interactive learning rather than an abstract body of knowledge to be ingested and digested.

It must be understood, of course, that actual enhancement of the curriculum by the teacher in this manner will require a much more sophisticated approach to curriculum development than that found presently in many schools. No longer will the curriculum be a body of study handed to the teacher to be delivered to the students according to rigidly drawn lines of delimitation and

narrowly conceived versions of accountability. In this approach, the curriculum becomes a living interaction of the student with the planned learning environment. School site leaders will have to develop truly collegial methods of constructing, delivering and monitoring curricula with teachers as full partners in the process. Administrative "policing" of intricate but "dead" curriculum will hopefully become a thing of the past.

Relationship of Multimedia Authoring Tools to Instructional Delivery

Sergiovanni and Starratt (1979, p. 234) defined instruction as the "process by which the student is led to encounter the curriculum." We maintain that the individual teacher is the key by which that critical encounter is unlocked. If the student is not actually drawn into thoughtful interaction with the curriculum -- however well-planned it is -- effective learning does not occur. The history of schooling is replete with examples of masterfully planned curricula that somehow never seemed to result in true integration of learning in the student.

Use of multimedia authoring tools might well help the individual teacher discover and develop instructional approaches and teaching abilities heretofore unrealized. The capability of integrating the cognitive and affective domains of learning, especially when linked with psychomotor development, places the student in a vibrantly active world of discovery. Instead of being controlled by dull classroom routine stressing passive memorization of external data, the student becomes actively involved in fostering his/her own immersion in that which is to be learned. To a large extent, he/she exercises real control of his/her own learning -- perhaps for the first time. Self-actualization (Maslow, 1943, 1954) of both the teacher and the student can result from the immediate concrete relevance of the instructional experience offered.

However, if the type of instruction described here is to become a reality school site administrators must understand that multimedia authoring tools cannot be used merely to impose a "teacher-proof" model of instruction in which technology replaces the creative professional presence of the instructor. Their true use lies instead in being a resource available to the teacher to craft appropriate instructional delivery tailored to the real -- not assumed --learning needs of individuals.

Relationship of Multimedia Authoring Tools to
Accurate Measurement of Instructional Effectiveness

Accurate measurement of instructional effectiveness is a pressing need of contemporary schooling. From the recommendations of A Nation At Risk: The Imperative for Educational Reform (National Commission on Excellence in Education, 1983) to America 2000: An Education Strategy (United States Department of Education, 1991), educational reform strategies are typically based upon the assumption that such measurement is both possible and practical.

Multimedia authoring tools could be used not only to test the short-term retentive ability of students but -- more importantly -- the internalization of learning. Valid and reliable evaluation of affective learning has largely evaded the education profession. Through the use of multimedia authoring tools, teacher-made tests could be devised to evaluate the student's mastery of both the affective and cognitive aspects of the curriculum through a variety of modalities. More accurate measures of instructional effectiveness than those currently used most frequently (e.g., standardized achievement tests and narrowly constructed expected learning outcomes) might well result.

Implications for school site administrators include expanding strategic educational

planning beyond the limits of standardized achievement tests and rigid expected learning outcomes. Innovative forms of measurement aimed at determining the extent of true integration of learning in the lives of the students might well be attempted.

Conclusions

The following conclusions applicable to school site administration have been drawn from the foregoing discussion:

-- Technology, as exemplified by multimedia authoring tools, can be used as a vehicle to free teachers from currently necessary but time-consuming routine tasks. Much of the present accountability movement in elementary and secondary education is based upon somewhat excessive standardization of curriculum and instruction resulting in domination of the teacher's time-economy by routine quasi-clerical tasks. Properly used, the inherent speed of multimedia authoring tools could help free up much-needed "quality time" for teachers to engage in creative planning and reflective practice.

-- Creative use of technology could help open up new perspectives of the possible for the school. Multimedia authoring tools could help release latent creative potential of both teachers and students. As realization of the inherent human potential of all participants increased, their collective vision for the school as a learning enterprise might well become both broader and deeper.

-- Proper use of technology could help diminish the deadening effect of bureaucracy on educational reform at the school site level. One effect of the current school reform movement has been an attempt to utilize technology as a guarantor of minimally acceptable learning performance by students. Unfortunately, this tendency has become

incorporated into the traditional bureaucracy of American public education. However, technology might just as easily be used to liberate and expand the role of the teacher in seeking genuine reform of public education. Utilization of multimedia authoring tools is but one example of how technology could become an aid to self-actualization of both teachers and students.

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